Examiner admits that Crawshaw does not disclose many of the claimed features of independent Claim 6 of the present application. Applicant agrees that Crawshaw does not disclose each of the claimed features of the claims of the present application, and therefore, this §102 rejection should be withdrawn.

The Examiner, however, contends that "these differences are only found in the nonfunctional descriptive materials and do not alter how the work management system functions (i.e., the descriptive material does not reconfigure the work management system)." The Examiner cites two cases *In re Gulack*, 703 F.2d 1381, 1385, 217 USPQ 401, 404 (Fed. Cir. 1983) and *In re Lowry*, 32 F.3d 1579, 32 USPQ2d 1031 (Fed. Cir. 1994) in support of his rejection. It is respectfully submitted that a close review of these cases supports Applicant's position and is contrary to the Examiner's position.

Gulack is directed to a band with digits thereon and a mathematical algorithm for which the digitals were developed. The board in that case rejected the claims under 35 USC 103 and stated that a printed band is well known in the art. The Federal Circuit reversed and stated that the numbers printed on the band had a functional relationship to the band itself. The Court stated that although the prior art disclosed a band with printed matter, the Court concluded that the prior art neither disclosed nor suggested the claimed features of Gulack's invention.[1] The Court also cautioned against the liberal use of such printed matter rejections. 217 USPQ 403 n. 8.

In *Lowry*, the Federal Circuit found that the claim limitations defined functional characteristics of the memory which imparted a physical organization on the information stored in the memory.[2] The Court found that data structures are not analogous to printed

[1] A copy of this decision is included for the Examiner's review.
[2] A copy of this decision is included for the Examiner's review.

matter. The Court stated that the data structures contain both information used by application programs and information regarding their physical interrelationships within a memory. The claims dictate how application programs manage information. Further, the Court noted that the stored data existed as a collection of bits having information about relationships between the data structures, and that the data structures are specific electrical or magnetic structural elements in a memory. 32 USPQ2d at 1034-1035.

The Court in *Lowry* further found that the data structures follow a particular sequence that enables more efficient data processing operations on stored data and perform a function. 32 USPQ2d at 1035. The Court then reversed the rejection over the art since the cited art did not disclose Lowry's data structures and their specific relationships.

Similarly, Crawshaw does not disclose or suggest each of the steps, data structures and relationships therein in the method of independent Claim 6 of the present application. Each of these steps involves storing and organizing specific data in specific locations, with the stored data having information about the relationship between the various data structures in memory. In accordance with *Lowry*, the stored data is a collection of bits having information about relationships between the data structures in memory. These features are useful in providing a system which is capable of unified management of employees' work in a correct and easy way (see e.g. pages 1-11 of the present application). The claimed features are clearly functional in accordance with the standard set in *Lowry*. Hence, it is respectfully submitted that the Examiner's position is incorrect under the law and that the claimed elements in Claim 6 are functional and need to be considered by the Examiner.

Therefore, independent Claim 6 is consistent with the explanation in *Lowry* of a functional relationship with the memory and acceptable, functional patentable subject matter. Hence, all of the claimed features must be considered.

As the Examiner admits, Crawshaw clearly does not disclose or suggest the claimed features of independent Claim 6. Therefore, Claim 6 and those claims dependent thereon are patentable over Crawshaw.

Accordingly, it is respectfully requested that this rejection be withdrawn.

Claim Rejections - 35 USC §103

The Examiner also rejects Claims 6, 9-10 and 15-31 under 35 USC §103(a) as being unpatentable over Crawshaw in view of Krenzke (US 6,338,097). This rejection is also respectfully traversed.

For substantially the same reasons as discussed above, each of the claimed elements must be considered, and the cited references do not disclose or suggest all of the claimed elements. Therefore, the claims are patentable over the cited references, and it is respectfully requested that this rejection be withdrawn.

Conclusion

Therefore, it is respectfully submitted that the present application is in a condition for allowance and should be allowed.

Please charge our Deposit Account No. 50-1039 for any further fee due for this Response.

Favorable reconsideration is earnestly solicited.

Respectfully submitted,

Date: May 22, 2006

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Court of Appeals, Federal Circuit

In re Gulack

No. 82-580

Decided Mar. 30, 1983

PATENTS

1. **Patentability — Anticipation — In general (§51.201)**

   Patentability — Invention — In general (§51.501)

   Patentability — Subject matter for patent monopoly — Printed matter (§51.611)

Differences between invention and prior art cited against it cannot be ignored merely because those differences reside in content of printed matter; "printed matter rejection" under Section 103 stands on questionable legal and logical footing; standing alone, description of element of invention as printed matter tells nothing about differences between invention and prior art or about whether that invention was suggested by prior art; printed matter rejection is based on case law antedating 1952 Patent Act, employing point of novelty approach; 1952 Act legislatively revised that approach through its requirement that claim be viewed as whole in determining obviousness; under Section 103, Board of Appeals cannot dissect claim, excise printed matter from it, and declare remaining portion of mutilated claim to be unpatentable; claim must read as whole.

2. **Patentability — Anticipation — In general (§51.201)**

   Patentability — Invention — In general (§51.501)

   Patentability — Subject matter for patent monopoly — Printed matter (§51.611)

Printed matter that is not functionally related to substrate does not distinguish invention from prior art in terms of patentability; although printed matter must be considered, in that situation it may not be entitled to patentable weight.

3. **Patentability — Anticipation — In general (§51.201)**

   Patentability — Invention — In general (§51.501)

   Patentability — Subject matter for patent monopoly — Printed matter (§51.611)

Functional relationship between printed matter and substrate of precise type found in In re Miller, 164 USPQ 46, — to size or type of substrate, or conveying information about substrate — is not required; what is required is existence of differences between appealed claims and prior art sufficient to establish patentability; bare presence or absence of specific functional relationship, without further analysis, is not dispositive of obviousness; rather, critical question is whether there exists any new and unobvious functional relationship between printed matter and substrate.

Particular patents — Mathematical Device

Gulack, Educational and Recreational Mathematical Device in the Form of a Band, Ring or Concentric Rings, rejection of claims 1-4 and 6 reversed.

Appeal from Patent and Trademark Office Board of Appeals.

Application for patent of Max A. Gulack, Serial No. 935,183, filed Aug. 18, 1978. From decision rejecting claims 1-4 and 6, applicant appeals. Reversed; Friedman, Circuit Judge, dissenting with opinion.

C. Bruce Hamburg, New York, N.Y., for appellant.

John W. Dewhirst (Joseph F. Nakamura and Fred E. McKelvey, on the brief) for U.S. Patent and Trademark Office.

Before Friedman, Baldwin, and Smith, Circuit Judges.

Smith, Circuit Judge.

This is an appeal from the decision of the U.S. Patent and Trademark Office Board of Appeals sustaining the rejection under 35 U.S.C. §103 of claims 1-4 and 6 of application serial No. 93,183, filed August 18, 1978, entitled "Educational and Recreational Mathematical Device in the Form of a Band, Ring or Concentric Rings." We reverse.

I.

The stated object of the disclosed invention is to exploit certain arithmetic properties of all prime numbers larger than 5, P,[1] to create the semblance of magic or to educate

[1] The variable P is defined in the specification as any prime number (an integer not divisible without remainder by any number except itself and unity) greater that 5. E.g., 7, 11, 13, etc.

with respect to intriguing aspects of number theory.

A.

The physical configuration of the invention is extremely simple. The appealed claims recite three key elements: (1) a *band*, ring, or set of concentric rings; (2) a plurality of individual *digits* imprinted on the band or ring at regularly spaced intervals; and (3) an *algorithm* by which the appropriate digits are developed.

The band[2] serves two functions: it supports the sequence of digits and it presents the digits as an endless sequence with no discrete beginning or end. The band is preferably an endless loop of paper, fabric, or plastic material. Specific embodiments of the invention set forth in the specification and appealed claims include a belt, hatband, headband, skullcap border, necklace, ring, table edge, household device or utensil, jewelry, and other artifacts.

The digits are integers, generated by the algorithm, and displayed at equal intervals on the outer surface of the band.

The algorithm for generating Q, the sequence of digits imprinted on the band, is also set forth in the specification.

> A row of P-1 nines is always divisible by P to give a quotient Q which is an integral number.
>
> Whenever a smaller number of nines is divisible by P to give an integral quotient Q, the nunmber will always consist of some integral fractional part of P-1 nines, which may be designated as P-1/n in which n is an integer greater than 1.
>
> * * *
>
> * * * It will be found that the number of digits in the quotient Q will always be P-1 or some integral fraction of P-1. * * *[3]
>
> The specification describes three qualities of the sequence of digits Q, subject to manipulation for recreational or educational purposes. First, the digits have a "cyclic" nature.[4] Second, the number of digits in the prime P will fix the maximum number of digits appearing in sequence in Q. For example,
>
> [I]f P is 2 digits, Q or any multiple of Q, or cyclic variation of Q or any multiple of any cyclic variation of Q, if reduced to the original number of digits as aforesaid, will never contain any sequence of any 2 digits more than once. * * *

Finally, the digits of Q are subject to manipulation in accordance with procedures set forth in the specification to produce a series of nines.

Appellant recommends the 180 digit quotient Q (derived from P = 181), because its length is sufficient to lend mystical qualities to the manipulation of the band yet short enough to be readily imprinted on the band. The MAGIC RING OF HAYIM, constructed in accordance with the appealed claims, is capable of manipulation as set forth in the specification to perform magic tricks or to display various aspects of number theory.

The appealed claims read as follows:

> 1. An educational and recreational mathematical device comprising at least one band which is endless or adapted to have ends thereof fastened to form an endless band and a plurality of individual digits imprinted on the band at regularly spaced intervals, the digits when all read consecutively clockwise as a number constituting a quotient obtained by dividing a number constituted of P-1/n nines, in which P is a prime number greater than 5 and n is an integer at least 1, by P and adding to the lefthand end of said quotient any number of zeros necessary to increase the number of digits in said quotient to P-1/n, n being so selected that P-1/n nines is the minimum number of nines divisible by P so that said quotient is an intergral [sic] number.
>
> 2. Device according to claim 1, in which said band is endless.
>
> 3. Device according to claim 1, in which said band comprises an article of apparel.
>
> 4. Device according to claim 3, in which said band is part of a hat or cap.
>
> 6. Device according to claim 1 in which said band is an article of jewelry.

B.

The examiner rejected claims 1-4 and 6 on two grounds: as not dircted to statutory subject matter, 35 U.S.C. §101; and as unpatentable over Wittcoff,[5] 35 U.S.C. §103. The

[2] As stated by appellant in his specification, band is intended to mean a band, ring, or set of concentric rings.

[3] To illustrate:
If P = 7 (a prime greater than 5);
then Q = 999,999 ÷ 7; that is Q = 142,857.
If P = 13, the smallest number of nines divisible by 13 that yields an integral quotient is 6,
thus Q = 999,999 ÷ 13 or Q = 76,923.
(Note that in accordance with the specification, (P-1) ÷ n = 6, where n = 2, and P = 13.)

[4] To simplistically illustrate this cyclic feature:
If P = 7;
then Q = 142,857, and 2Q = 285,714.
The sequence of digits is the same in each number; the starting position has merely shifted.

[5] E. Wittcoff, U.S. patent No. 2,796,680, issued June 25, 1957, for "Novelty Educational Hats." Wittcoff discloses a hat with an endless band hav-

board reversed the section 101 rejection, finding that the claims define an article of manufacture covered by 35 U.S.C. §101.

In his section 103 rejection, the examiner stated that the appealed claims differed from Wittcoff only in the specific digits printed on the band. The examiner found no relationship between appellant's digits and band except that the band is the surface on which the digits are printed. The examiner cited In Re Miller[6] for the proposition that "[m]ere printed matter can not impart a patentable feature to a claim." Applying Parker v. Flook,[7] the examiner viewed applicant's digits as well known and unable, therefore, to define over Wittcoff.

In affirming the 103 rejection, the board found no meaningful relationship between the digits and the band of the type indicated by the court in Miller.

> Unlike the fact situation in Miller, the printed indicia claimed herein [convey] no meaningful information in regard to the substrate [they are] arranged on, [do] not require any size relationship of the substrate, and [do] not require any particular substrate to effectively convey the information. We are convinced that *there is no meaningful functional relationship between appellant's indicia and the claimed endless band.*
>
> * * * In our opinion, the endless loop formed by the hatband with numerical digits printed thereon is the same structure claimed by appellant and *the sole difference is in the content of the printed material.* Accordingly, *there being no functional relationship of the printed material to the substrate, as we have noted above, there is no reasons* [sic] *to give patentable weight to the content of the printed matter which, by itself, is non-statutory subject matter.*
>
> * * *
>
> The rejection of claims 1 to 4 and 6 under 35 USC 103 is sustained. [Emphasis supplied.]

We understand the board as not giving the printed matter patentable weight because the board felt that there is no functional relationship between the printed matter and the substrate. In doing so, we do not interpret the board as holding that the printed matter can be ignored because it, by itself, is non-statutory subject matter. The board cited no authority in analyzing the relevance of the lack of a functional relationship, or of the status of the printed matter as non-statutory subject matter, to its decision not to accord the printed matter patentable weight. Because of the possible ambiguity of the board's articulation of its holding, we feel compelled to clarify the distinction.

[1] Differences between an invention and the prior art cited against it cannot be ignored merely because those differences reside in the content of the printed matter.[8] Under section 103, the board cannot dissect a claim, excise the printed matter from it, and declare the remaining portion of the mutilated claim to be unpatentable. The claim must be read as a whole.[9] If the board meant to disregard that

---

ing information printed in areas around both the inside and outside of the band. The hat has an aperture at the base of the crown through which an area of the band is viewed. The band can be rotated to align any specific area of information with the aperture. When an inquiry on the outside of the band is aligned with the aperture, the corresponding answer is viewed through the aperture from the inside of the hat.

[6] In re Miller, 418 F.2d 1392, 164 USPQ 46 (CCPA 1969).

[7] Parker v. Flook, 437 U.S. 584, 198 USPQ 193 (1978).

[8] A "printed matter rejection" under §103 stands on questionable legal and logical footing. Standing alone, the description of an element of the invention as printed matter tells nothing about the differences between the invention and the prior art or about whether that invention was suggested by the prior art. A printed matter rejection is based on case law antedating the 1952 patent act, employing a point of novelty approach. In re Sterling, 70 F.2d 910, 21 USPQ 519 (CCPA 1934). The 1952 act legislatively revised that approach through its requirement that the claim be viewed as a whole in determining obviousness. Graham v. John Deere Co., 383 U.S. 1, 148 USPQ 459 (1966). The CCPA has considered *all* of the limitations of the claims including the printed matter limitations, in determining whether the invention would have been obvious. See In re Royka, 490 F.2d 981, 180 USPQ 580 (CCPA 1974); In re Cavrich, 451 F.2d 1091, 172 USPQ 121 (CCPA 1971). In Royka, 490 F.2d at 985, 180 USPQ at 583, the CCPA, notably weary of reiterating this point, clearly stated that printed matter may well constitute structural limitations upon which patentability can be predicated.

[9] 35 U.S.C. §103 (1976) specifically provides that:

> "A patent may not be obtained * * * if the differences between the subject matter sought to be patented and the prior art are such that *the subject matter as a whole* would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. * * * (Emphasis supplied.)

See Graham, 383 U.S. 1, 148 USPQ 459; Flook, 437 U.S. at 594 n.16, 198 USPQ at 199 n.16 (noting the §103 requirement of reading claims as a whole and extending that requirement to §101); Diamond v. Diehr, 450 U.S. 175, 188, 209 USPQ 1, 9 (1981) (also applying that requirement in a §101 setting); Royka, 490 F.2d at 985, 180 USPQ at 583.

basic principle of claim interpretation, we must reverse the rejection as a matter of law.

[2] If, instead, the board sought only to construe and apply Miller within the context of a section 103 rejection, we find no error in the board's articulation of the law. Where the printed matter is not functionally related to the substrate, the printed matter will not distinguish the invention from the prior art in terms of patentability.[10] Although the printed matter must be considered, in that situation it may not be entitled to patentable weight. This, apparently, was the board's conclusion with respect to Gulack's invention.

However, because we find that the digits of Gulack's invention are functionally related to the band, and because Wittcoff fails to disclose or suggest the subject matter recited in the appealed claims, considered as a whole, we reverse.

The sole issue is whether the board correctly affirmed the rejection of the appealed claims as obvious in view of Wittcoff under 35 U.S.C. §103.

II.

The board, responding to appellant's arguments based on In re Miller,[11] found no functional relationship of the type present in Miller.

A.

Miller involved an appeal from the board's affirmance of the rejection of claims drawn to a measuring device for use in fractioning recipes. No statutory ground for the rejection was specified. The rejection in Miller was on the basis that the invention lacked "the required cooperative structural relationship necessary before the printed matter can be given patentable weight."[12]

The CCPA [13] responded, stating:[14]

> [i]t seems to us that what is significant here is not structural but *functional* relationship * * *. * * *
>
> As for the examiner's characterization of the indicia and legend as "unpatentable printed matter," we note that the examiner himself recognizes the fact that printed matter, in an article of manufacture claim, *can* be given "patentable weight." He did so in allowing claims. His characterization of printed matter as "unpatentable" is beside the point; no attempt is here being made to patent printed matter as such. The fact that printed matter *by itself* is not patentable subject matter, because nonstatutory, is no reason for ignoring it when the claim is directed to a combination. Here there is a new and unobvious functional relationship between a measuring *receptable*, volumetric *indicia* thereon indicating volume in a certain ratio to actual volume, and a *legend* indicating the ratio, and in our judgment the appealed claims properly define this relationship. * * * [Emphasis in original.]

The court found that the printed matter of Miller's invention was functionally related to the volume measuring device and reversed the rejection.

B.

[3] Similarly, in examining Gulack's invention, we find that a functional relationship does exist between the printed matter and the substrate. A functional relationship of the precise type found by the CCPA in Miller — to size or to type of substrate, or conveying information about substrate — is not required. What is required is the existence of *differences* between the appealed claims and the prior art sufficient to establish patentability. The bare presence or absence of a specific functional relationship, without further analysis, is not dispositive of obviousness. Rather, the critical question is whether there exists any new and unobvious functional relationship between the printed matter and the substrate.[15] With these thoughts in mind we turn now to examine the obviousness of the appealed claims in light of the cited reference, Wittcoff.

III.

Appellant and the board agree that the sole difference between the appealed claims and Wittcoff resides in the content of the printed matter. The board declined, however, to accord that printed matter patentable weight.

Wittcoff discloses the application of printed matter to a band. The printed matter suggested by Wittcoff is data that is to be committed to memory, such as addition, subtraction,

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[10] Miller, 418 F.2d 1392, 164 USPQ 46.

[11] Id.

[12] Id at 1395, 164 USPQ at 48.

[13] The holdings of the United States Court of Customs and Patent Appeals and of the United States Court of Claims were adopted as precedent in the Court of Appeals for the Federal Circuit in South Corp. v. United States, 690 F.2d 1368, 1370, 215 USPQ 657, 658 (Fed. Cir. 1982).

[14] Miller, 418 F.2d at 1396, 164 USPQ at 48-49.

[15] Id. at 1396, 164 USPQ at 49.

multiplication, history dates, historical personages, and the like. The data items are independent, bearing no direct relation to the other data entries on Wittcoff's band. The relationship of the Wittcoff data to the band is for purposes of support and display. The data must be imprinted on the band so that the answer to the inquiry displayed on the outer surface of the band is visible when viewed from inside the hat through the aperture. Wittcoff discloses an endless band, yet the areas of printed matter displayed on the Wittcoff band are not arranged in any particular sequence.

The appealed claims, on the other hand, require a particular sequence of digits to be displayed on the outside surface of a band. These digits are related to the band in two ways: (1) the band supports the digits; and (2) there is an endless sequence of digits — each digit residing in a unique position with respect to every other digit in an endless loop. Thus, the digits exploit the endless nature of the band.

The differences between the appealed claims and Wittcoff reside in appellant's particular sequence of digits Q, and in the derivation of that sequence of digits. These features are critical to the invention disclosed by the appealed claims. Wittcoff neither discloses nor suggests either feature.

IV.

We reject the board's conclusion that there is no functional relationship between the printed matter and the substrate of the appealed claims. Such a relationship does exist and it is different from the relationship exhibited by the corresponding elements of the Wittcoff reference. We find no suggestion in the cited reference of appellant's particular sequence of digits Q or of the derivation of that sequence.

Reversed.

Friedman, Circuit Judge, dissenting.

I would affirm the Board's decision sustaining the rejection of the claimed invention as obvious under section 103.

The appellant's primary claim is for "[a]n educational and recreational mathematical device," namely, an endless band upon which are imprinted numbers in a particular sequence derived from the application of an algorithm. Subordinate claims describe the band as an article of apparel, part of a hat or cap, or an article of jewelry.

The algorithm is not patentable and "is treated as though it were a familiar part of the prior art." Parker v. Flook, 437 U.S. 584, 592 (1978). Similarly, the particular numbers produced by an abstract solution of the algorithm cannot themselves be claimed, although the practical application of those numbers may be patentable. See In re Meyer, 688 F.2d 789, 215 USPQ 193 (CCPA 1982); In re Abele, 684 F.2d 902, 214 USPQ 682 (CCPA 1982). The issue under section 103 is whether, to one of ordinary skill in the art of developing algorithms and applying their product for educational or recreational purposes, it would have been obvious to apply the algorithm by displaying the result of its solution on a continuous band, as the appellant disclosed in his patent application. The Board correctly answered that question affirmatively.

The Witcoff patent teaches the use of a hatband to display numbers as an "educational or game-playing device." Although there are differences between the display of numbers in appellant's invention and their display in Wittcoff, it would have been obvious from Wittcoff for one of ordinary skill in the art who wanted to use the numbers the algorithm produced for appellant's purposes, to display them on a continuous band. Indeed, one of the appellant's subordinate claims displays the numbers on a hat or cap.

The display of the numbers on a band or other object that permits them to be shown in a series without a particular beginning or end would have been obvious even without Wittcoff. The numbers can be used for the recreational and educational purposes the appellant claims merely by arranging them in a continuous series. They do not need to be placed on an "endless band" as the appellant claimed. In fact, at oral argument the appellant conceded that the same result his invention accomplishes also could be accomplished by placing the numbers in a continuous series upon a cube or other shape, or even by writing them in a circle upon a flat surface. The precise nature of the object on which the numbers are placed is thus of little importance. The only matter that is of significance—the arrangement of the numbers as a continuous series—would have been obvious to anyone of ordinary skill in the art who knew the algorithm.

In In re Miller, 418 F.2d 1392, 164 USPQ 46 (CCPA 1969), as the court points out, the court determined that there was "a new and unobvious functional relationship" between the measuring receptacles and the descriptions and legends on them. In the present case, unlike Miller, I do not think that the "functional relationship" between the numbers resulting from the application of the

algorithm and their display upon the continuous band was new and unobvious.

Court of Appeals, Ninth Circuit

Jason v. Fonda, et al.

No. 81-5973

Decided Feb. 8, 1983

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1. Infringement — Evidence of (§24.05)

Evidence showing no more than "bare possibility" that alleged infringers had access to author's work is insufficient to create issue of material fact.

2. Infringement — Evidence of (§24.205)

Even assuming alleged infringers had access to author's work, infringement is not established if there is no substantial similarity between two works.

3. Pleading and practice in courts — Dismissal of suit (§53.33)

It is proper to dismiss pendent state claims when federal claim is dismissed prior to trial.

Appeal from District Court for Central District of California, Kelleher, J.; 217 USPQ 231.

Action by Sonya Jason, against Jane Fonda, Bruce Gilbert, Jerome Hellman, JPL Production, Inc., United Artists Corporation, National Broadcasting Company, Inc., Nancy Dowd, Robert C. Jones, and Waldo Salt, for copyright infringement, unfair competition, misappropriation, and breach of implied contract. From order granting summary judgment for defendants, plaintiff appeals. Affirmed.

Sonya Jason, pro se.

Ronald S. Rosen, Los Angeles, Calif., for defendants.

Before Anderson, Pregerson, and Nelson, Circuit Judges.

Anderson, Circuit Judge.

Sonya Jason brought an action against Jane Fonda and eight other defendants for copyright infringement, unfair competition, misappropriation, and breach of implied contract. Mrs. Jason's primary allegation was that the defendants' motion picture, Coming Home, infringed on the copyright in her novel, Concomitant Soldier — Woman and War. The district court granted the defendants' motion for summary judgment and dismissed the other claims. We affirm.

[1,2,3] Our review of the facts and issues leads us to concur in the well-reasoned decision of Judge Kelleher filed September 21, 1981. 526 F.Supp. 774, 217 USPQ 231 (C.D. Cal. 1982). We therefore incorporate his memorandum of decision by reference. Judge Kelleher aptly points out:

(1) Mrs. Jason presented evidence showing no more than a "bare possibility" the defendants has access to her work. Such a showing is insufficient to create a genuine issue of material fact. See British Airways Board v. Boeing Company, 585 F.2d 946, 952 (9th Cir. 1978), cert. denied, 440 U.S. 981 (1979);

(2) Even assuming access, there was no substantial similarity between the two works under the standards announced by this court in Sid & Marty Krofft Television Productions, Inc. v. McDonald's Corp., 562 F.2d 1157, 196 USPQ 97 (9th Cir. 1977); and

(3) It is proper to dismiss pendent state claims when the federal claim is dismissed prior to trial. Wham-O Mfg. Co. v. Paradise Manufacturing Co., 327 F.2d 748, 753, 140 USPQ 357, 361-362 (9th Cir. 1964); see also, Wren v. Sletten Construction Co., 654 F.2d 529, 536 (9th Cir. 1981).

Additionally, Judge Kelleher did not abuse his discretion in handling discovery nor in denying Mrs. Jason's motion for reconsideration.

The appellees' request for sanctions and attorney's fees is denied. Single costs are allowed.

The judgment of the district court is *Affirmed.*

857 F.2d 191, 194 (3d Cir. 1988) (citations omitted).

Essentially, the defendants claim that NKP violated Rule 11 by failing to conduct a reasonable pre-filing inquiry into the relevant facts and law and by signing the documents with the improper motive of increasing litigation costs for the defendants. There is, however, no support for this conclusion in the record before the Court. Under a Rule 11 analysis, the Court judges an attorney's conduct "by what was reasonable to believe at the time the pleading, motion, or other paper was submitted." *Mary Ann Pensiero, Inc. v. Lingle*, 847 F.2d 90, 94 (3d Cir. 1988). Nothing in the Complaint or in its numerous exhibits give this Court reason to believe that plaintiff's claims were sanctionable, as viewed from the time they were filed.

Moreover, on account of NKP's voluntary withdrawal of portions of its claims against the defendants, the Court has issued no ruling as to the merit of those claims, and will not do so now. The Court encourages parties to police their own litigation practice to save time and expense for the Court and the parties. This is the very reason for the "safe harbor" provision in the amended rule. The Court applauds such conduct and in no way finds it sanctionable. Under the circumstances of this case, it would be an abuse of Rule 11 for the Court to use NKP's withdrawal of portions of its Complaint as the instrument through which to issue sanctions.

In reviewing the Complaint for Rule 11 purposes, the Court finds that NKP did not violate any one of the three duties: (1) to read the document before signing; (2) to conduct an objectively reasonable inquiry into the relevant law and facts; and (3) not to sign for any improper motive. *See* 5A Wright & Miller, *Federal Practice and Procedure*, § 1335, at pp. 57-58 (2d Ed. 1990). The Court finds NKP's conduct to be objectively reasonable under the circumstances. Although the Court acknowledges that multiple litigations and forum shopping are inherently wasteful, upon careful consideration, the Court finds that NKP's actions have not been inspired by any improper motive.

III. *CONCLUSION*

For the reasons discussed above, the Court *denies* the defendants' motion to dismiss the Lanham Act claim, *denies* the defendants' motion to dismiss for lack of personal jurisdiction and *denies* defendants' motion for sanctions. An appropriate order will follow.

U.S. Court of Appeals
Federal Circuit

In re Lowry

No. 93-1558

Decided August 26, 1994

PATENTS

1. Patentability/Validity — Anticipation — In general (§115.0701)

Patentability/Validity — Obviousness — In general (§115.0901)

Board of Patent Appeals and Interferences erred, in upholding rejection of claims for data processing system under 35 USC 102(e) and 103, by analogizing data structure and computer memory of claimed system to printed matter, since board improperly extended printed matter rejection to field of information stored in memory, and since prior cases involving printed matter have no factual relevance if invention requires that information be processed by computer rather than human mind.

2. Patentability/Validity — Anticipation — Prior art (§115.0703)

Patentability/Validity — Obviousness — Relevant prior art — Particular inventions (§115.0903.03)

Claims for data processing system are neither anticipated by, nor obvious in view of, prior patent for database management system, since claimed invention, which employs plurality of attribute data objects having both hierarchical and non-hierarchical relationships, involves organization of information and its interrelationships which reference neither discloses nor suggests.

Appeal from the U.S. Patent and Trademark Office, Board of Patent Appeals and Interferences.

Patent application of Edward S. Lowry, serial no. 07/181,105 (data processing system having a data structure with a single, simple primitive). From decision upholding rejection of claims under 35 USC 102(e) and 103, applicant appeals. Reversed.

Barry N. Young, Maynard, Mass., and Denis G. Maloney, Lexington, Mass., for appellant.

Lee E. Barrett, associate solicitor, Fred E. McKelvey, solicitor, and Murriel E. Crawford, associate solicitor, PTO, for appellee.

Before Skelton, senior circuit judge, and Rich and Rader, circuit judges.

Rader, J.

Edward S. Lowry appeals the U.S. Patent and Trademark Office Board of Patent Appeals and Interferences' rejection of all claims in Patent Application Serial No. 07/181,105. On July 30, 1993, the Board reversed the rejection of claims 1 through 5 under 35 U.S.C. § 101 (1988). The Board also affirmed the rejection of claims 1 through 19 under 35 U.S.C. § 103 (1988) and claims 20 through 29 under 35 U.S.C. § 102(e) (1988). This court reverses.

BACKGROUND

Lowry's patent application — "Data Processing System Having a Data Structure with a Single, Simple Primitive" — relates to the storage, use, and management of information residing in a memory. The PTO does not dispute the features and advantages of Lowry's claimed invention. The invention provides an efficient, flexible method of organizing stored data in a computer memory.

A memory stores data according to a particular order or arrangement. Application programs use stored data to perform specified functions. A data model provides the framework for organizing and representing information used by an application program. Data models define permissible data structures — organizational structures imposed upon the data used by the application program — compatible with particular data processing systems. Data structures are the physical implementation of a data model's organization of the data. Data structures are often shared by more than one application program.

The prior art contains data models and data structures. Prior art data models are generally one of two kinds: functionally expressive or structurally expressive data models. Functionally expressive data models enable complex nested operations using large blocks of data. These data models, however, are limited to a narrow class of applications and generally require more complex interfaces to functionality. Structurally expressive data models, on the other hand, define more varied data structures capable of representing accurately complex information. These data models, however, make complex nested operations on large blocks of data quite difficult.

Lowry's invention seeks to optimize both structural and functional expressiveness. Lowry discloses a data structure accessible by many different application programs. Lowry's data structure is based upon the "Attributive data model." The Attributive data model represents complex information in terms of attributes and relationships between attributes. According to Lowry's specification, "[a]n attribute expresses the idea that one thing is attributed to another thing." Thus, the Attributive data model capitalizes on the concept that a database is a collection of attributions, whereby information is represented in terms of its characteristics and relationships to other information.

In accordance with the Attributive data model, Lowry's data structure comprises a plurality of attribute data objects (ADOs) stored in memory. An ADO is a single primitive data element "compris[ing] sequences of bits which are stored in the memory as electrical (or magnetic) signals that represent information." It contains information used by the application program and information regarding its relationship with other ADOs. Lowry asserts that his data structure is functionally expressive by virtue of its representation of information in terms of attributes. Lowry also states that "[s]tructural expressiveness is achieved by making that primitive data object extremely simple and allowing for highly unconstrained interconnections between attribute instances."

According to the claimed invention, ADOs have both hierarchical and non-hierarchical interrelationships. A few specific rules govern these relationships. Because the claimed invention uses single ADOs governed by simple organizational rules, Lowry asserts that it may flexibly and accurately represent complex objects and relationships. The hierarchical relationships form a conceptual pyramidal structure. Hierarchical correlations describe "holding" or "being held" relationships. An ADO can "hold" one or more other ADOs. Each ADO, however, can "be held" by only one other ADO. Thus, while capable of holding many others, an ADO can be held by only one other ADO. One ADO, called the apex ADO, holds at least one other ADO but is held by no other ADO. This apex ADO is the only ADO that lacks a being-held relationship. From the apex ADO, the hierarchical relationships fan out in a pyramidal structure.

ADOs also have non-hierarchical relationships. These are essentially "pointing" relationships between ADOs. There are two basic types of ADOs: (1) element data objects, which refer to only themselves, and (2) relation data objects, which refer to one other ADO, called a referent ADO. A referent

ADO is merely an ADO that a relation data object refers to. Each ADO can be a referent ADO for more than one ADO. According to Lowry's specification, this arrangement of hierarchically and non-hierarchically related single primitive ADOs facilitates software operations such as retrieval, addition, and removal of information in the data structure.

Claims 1 through 5 claim a memory containing a stored data structure. Claim 1 is representative:

> 1. A memory for storing data for access by an application program being executed on a data processing system, comprising:
>
> a data structure stored in said memory, said data structure including information resident in a database used by said application program and including:
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> a plurality of attribute data objects stored in said memory, each of said attribute data objects containing different information from said database;
>
> a single holder attribute data object for each of said attribute data objects, each of said holder attribute data objects being one of said plurality of attribute data objects, a being-held relationship existing between each attribute data object and its holder attribute data object, and each of said attribute data objects having a being-held relationship with only a single other attribute data object, thereby establishing a hierarchy of said plurality of attribute data objects;
>
> a referent attribute data object for at least one of said attribute data objects, said referent attribute data object being nonhierarchically related to a holder attribute data object for the same at least one of said attribute data objects and also being one of said plurality of attribute data objects, attribute data objects for which there exist only holder attribute data objects being called element data objects, and attribute data objects for which there also exist referent attribute data objects being called relation data objects; and
>
> an apex data object stored in said memory and having no being-held relationship with any of said attribute data objects, however, at least one of said attribute data objects having a being-held relationship with said apex data object.

Claims 6 through 19 claim a data processing system executing an application program, containing a database, a central processing unit (CPU) means for processing the application program, and a memory means for holding the claimed data structure. Claims 20-23, 25, and 28 specify methods of accessing, creating, adding, and erasing ADOs within the data structure. Claim 24 specifies a method for creating a data structure. Claims 26, 27, and 29 claim methods of creating and erasing non-hierarchical relationships between ADOs and referent ADOs.

THE PROCEEDINGS BEFORE THE PATENT AND TRADEMARK OFFICE

The examiner rejected claims 1 through 5 under 35 U.S.C. § 101 as non-statutory subject matter. The examiner also rejected claims 1 through 19 under 35 U.S.C. § 103 as obvious in light of U.S. Patent No. 4,774,661 (Kumpati). Finally, the examiner rejected claims 20 through 29 under 35 U.S.C. § 102(e) as anticipated by Kumpati.

The Board reversed the 35 U.S.C. § 101 rejection. The Board found that claims 1 through 5, directed to a memory containing stored information, as a whole, recited an article of manufacture. The Board concluded that the invention claimed in claims 1 through 5 was statutory subject matter.

When evaluating patentability under sections 102 and 103, the Board failed to give patentable weight to the claimed data structure. The Board stated that the claims on appeal specify relationships between the ADOs stored in the memory. The Board analogized Lowry's data structure comprised of ADOs to printed matter and relied on this statement from *In re Gulack*, 703 F.2d 1381, 217 USPQ 401 (Fed. Cir. 1983):

> Where the printed matter is not functionally related to the substrate, the printed matter will not distinguish the invention from the prior art in terms of patentability. Although the printed matter must be considered, in that situation it may not be entitled to patentable weight.

Id. at 1385.

In *Gulack*, this court concluded that "the critical question is whether there exists any new and unobvious functional relationship between the printed matter and the substrate." *Id.* at 1386 (footnote omitted). The Board therefore framed the question as whether a new, nonobvious functional relationship exists between the printed matter (data structure with ADOs) and the substrate (memory). The Board determined that Lowry did not show such a functional relationship. Thus, the Board agreed with the examiner that the data structure could not distinguish the claimed invention from the prior art. The Board held that Kumpati, disclosing a CPU using a memory and containing stored data in a data structure, ren-

dered all claims either anticipated or obvious. Lowry appealed.

DISUSSION

This court reviews the Board's determination of obviousness *de novo*. *In re Woodruff*, 919 F.2d 1575, 1577, 16 USPQ2d 1934, 1935 (Fed. Cir. 1990). This court reviews factual findings underlying the obviousness determination for clear error. *Id.* Whether a prior art reference anticipates the claimed invention is a question of fact reviewed under the clearly erroneous standard. *In re King*, 801 F.2d 1324, 1326, 231 USPQ 136, 138 (Fed. Cir. 1986).

The Patent and Trademark Office (PTO) must consider all claim limitations when determining patentability of an invention over the prior art. *Gulack*, 703 F.2d at 1385. The PTO may not disregard claim limitations comprised of printed matter. *See Gulack*, 703 F.2d at 1384; *see also Diamond v. Diehr*, 450 U.S. 175, 191 [209 USPQ 1] (1981). This court in *Gulack*, however, would not give patentable weight to printed matter absent a new and unobvious functional relationship between the printed matter and the substrate. The Board in this case determined that Lowry's data structures were analogous to printed matter and therefore the specific features of the constituent ADOs deserved no patentable weight without a functional printed matter-substrate relationship. Finding no such functional relationship between the ADOs and the memory, the Board refused to consider the specific data structure limitations.

[1] As an initial matter, this court notes that *Gulack* cautioned against a liberal use of "printed matter rejections" under section 103:

> A "printed matter rejection" under § 103 stands on questionable legal and logical footing. Standing alone, the description of an element of the invention as printed matter tells nothing about the differences between the invention and the prior art or about whether that invention was suggested by the prior art. . . . [The Court of Customs and Patent Appeals], notably weary of reiterating this point, clearly stated that printed matter may well constitute structural limitations upon which patentability can be predicated.

Gulack, 703 F.2d at 1385 n.8. Despite this cautioning, the Board erroneously extended a printed matter rejection under sections 102 and 103 to a new field in this case, which involves information stored in a memory. This case, moreover, is distinguishable from the printed matter cases. The printed matter cases "dealt with claims defining as the invention certain novel arrangements of printed lines or characters, useful and intelligible only to the human mind." *In re Bernhart*, 417 F.2d 1395, 1399, 163 USPQ 611, 615 (CCPA 1969). The printed matter cases have no factual relevance where "the invention as defined by the claims *requires* that the information be processed not by the mind but by a machine, the computer." *Id.* (emphasis in original). Lowry's data structures, which according to Lowry greatly facilitate data management by data processing systems, are processed by a machine. Indeed, they are not accessible other than through sophisticated software systems. The printed matter cases have no factual relevance here.

Nor are the data structures analogous to printed matter. Lowry's ADOs do not represent merely underlying data in a database. ADOs contain both information used by application programs and information regarding their physical interrelationships within a memory. Lowry's claims dictate how application programs manage information. Thus, Lowry's claims define functional characteristics of the memory.

Contrary to the PTO's assertion, Lowry does not claim merely the information content of a memory. Lowry's data structures, while including data resident in a database, depend only functionally on information content. While the information content affects the exact sequence of bits stored in accordance with Lowry's data structures, the claims require specific electronic structural elements which impart a physical organization on the information stored in memory. Lowry's invention manages information. As Lowry notes, the data structures provide increased computing efficiency.

Indeed, Lowry does not seek to patent the Attributive data model in the abstract. Nor does he seek to patent the content of information resident in a database. Rather, Lowry's data structures impose a physical organization on the data.

In Lowry's invention, the stored data adopt no physical "structure" per se. Rather, the stored data exist as a collection of bits having information about relationships between the ADOs. Yet this is the essence of electronic Structure. In *Bernhart*, this court's predecessor noted:

> There is one further rationale used by both the board and the examiner, namely, that the provision of new signals to be stored by the computer does not make it a new machine, i.e. it is *structurally* the same, no matter how new, useful and unobvious the result. . . . To this question we say that if a

> machine is programmed in a certain new and unobvious way, it is physically different from the machine without that program; its memory elements are differently arranged. The fact that these physical changes are invisible to the eye should not tempt us to conclude that the machine has not been changed.

Bernhart, 417 F.2d at 1400 (emphasis added).

More than mere abstraction, the data structures are specific electrical or magnetic structural elements in a memory. According to Lowry, the data structures provide tangible benefits: data stored in accordance with the claimed data structures are more easily accessed, stored, and erased. Lowry further notes that, unlike prior art data structures, Lowry's data structures simultaneously represent complex data accurately and enable powerful nested operations. In short, Lowry's data structures are physical entities that provide increased efficiency in computer operation. They are not analogous to printed matter. The Board is not at liberty to ignore such limitations.

Even assuming, arguendo, that data objects and data structures are analogous to printed matter, the Board erred in its reliance on *Gulack*. As part of its burden to establish a *prima facie* case of obviousness, *see In re Oetiker*, 977 F.2d 1443, 1445, 24 USPQ2d 1443, 1444 (Fed. Cir. 1992), the burden of establishing the absence of a novel, nonobvious functional relationship rests with the PTO. "If examination at the initial stage does not produce a *prima facie* case of unpatentability, then without more the applicant is entitled to grant of the patent." *Id.* The PTO did not establish that the ADOs, within the context of the entire claims, lack a new and nonobvious functional relationship with the memory. The ADOs follow a particular sequence that enables more efficient data processing operations on stored data. The ADOs facilitate addition, deletion, and modification of information stored in the memory. In sum, the ADO's perform a function. *Gulack* requires no more. *See Gulack*, 703 F.2d at 1386.

With the foregoing in mind, this court now turns to the specific prior art rejections. The Board rejected claims 1 through 19 under section 103 as obvious over Kumpati. The Board found that claims 20-29 were anticipated by Kumpati. Claims 1 through 19 include a memory, comprising the claimed data structure, for storing data for access by an application program. Claims 20 through 29 describe methods of performing data management operations with respect to the claimed data structure.

The Kumpati patent, entitled "Database Management System with Active Data Dictionary," discloses a database management system containing an active data dictionary that the user can access and modify. Kumpati's data dictionary contains information about the structure and usage of the data stored in the database management system.

Kumpati discloses a data model within a database management system complete with hierarchical and relational interrelationships. Kumpati further defines an "attribute" as a "function that maps an entity set or relationship set into one or more value sets." A value set, in turn, "further identifies (or defines) the entity by populating these attributes with specific items of data which define these characteristics."

[2] Kumpati does not, however, disclose Lowry's ADOs and their specific hierarchical and non-hierarchical relationships. More specifically, Kumpati does not disclose the claimed pyramidal arrangement of hierarchically arranged ADOs, complete with apex ADO. Kumpati's relationship sets are different from Lowry's relation data objects, having non-hierarchical relationships with other ADOs. Neither are Kumpati's "attributes," performing a mapping function, equivalent to Lowry's ADOs, containing information used by the application program as well as information regarding its interrelationships with other ADOs.

Lowry's claimed invention involves an organization of information and its interrelationships which Kumpati neither discloses nor suggests. Kumpati also does not render Lowry's claims obvious. The Board erred in holding otherwise. Claims 1 through 19 are, as a whole, not obvious in light of Kumpati.

Because Kumpati does not contain all limitations of claims 20 through 29, the Board erred in holding these claims anticipated by Kumpati. Therefore, this court reverses the section 102 rejection of claims 20 through 29.

CONCLUSION

The Board erred by denying patentable weight to Lowry's data structure limitations. This court reverses the Board's determination that claims 1 through 19 are obvious. This court also reverses the Board's decision that claims 20 through 29 are anticipated under section 102.

REVERSED.